The Macdonald Journal

MARCH 1982

MACDONALD COLLEGE LIBRARY
APR

We're committed to your future.

At the Secretary of State, we've received some very good ideas from Quebec's anglophone communities. And, we've helped them grow. Here are just a few of the projects that the Secretary of State has been associated with last year:

- a conference for Quebec's English-speaking youth. Young Quebecers from every part of the province came together to discuss the difficulties and challenges facing Quebec's anglophone youth;
- an arts and crafts exhibition and tour that allowed local Gaspé artisans to display their works in other English-speaking communities throughout the region;
- a workshop that brought members of the province's 13 Quebec Young Farmers clubs together to develop leadership skills and to share ideas;
- a project by Youtheatre to bring live theatre to children in 90 communities in remote areas of the province;
- and many, many more.

In the course of funding these projects, we've developed a good idea of just how vital Quebec's anglophone communities really are, and how important they are to Canada's cultural heritage. A good idea deserves to grow.

A good idea deserves to grow.

For more information, contact: The Secretary of State, 1080, Beaver Hall Hill, Montreal, Quebec, H2Z 1S8. Tel.: (514) 283-5699 or call no charge 1-800-361-7418

Secretary of State / Secrétariat d'État

Canada

The Macdonald Journal

MARCH 1982

olume 43, No. 3
arch 1982

ditorial Board

hairman: Dr. Jean David
iss Hazel M. Clarke
ofessor R. Kok
ofessor J.D. MacArthur
ofessor Martin van Lierop

litor: Hazel M. Clarke
ontributing Editor:
uis Houde,
ormation Division,
nistry of Agriculture of Quebec
isiness Manager:
artin van Lierop

e Macdonald Journal is
blished by the Extension Program
the Faculty of Agriculture of
acdonald Campus of McGill
iversity.

aterial in this issue may be re-
nted editorially without permission;
wever, credit to the Macdonald Journal
uld be appreciated. Address all inquiries re
itorial matter and subscriptions to the
itor and inquiries re advertising and other
siness to the Business Manager: Box 284,
acdonald Campus of McGill University, Ste.
ne de Bellevue, Quebec, H9X 1C0.

cond class mail registration number 0463.

bscription rates are $3.00 for one year,
00 for two years, and $7.00 for three
ars in Canada. Outside Canada — $7.00
two years.

nted by Harpell's Cooperative, Gardenvale,
ebec.

This Issue

ver: The interprovincial 4-H exchange is one
he national 4-H programs available to rural
th across Canada. See Editorial, this page,
article on page 2. The cover shows 4-Hers
n across Canada enjoying a tour of Old
ntreal.

orial: 4-H: It's More Than Cows and Cookin'! 1

adian 4-H: An Open Door for Quebec's Rural Youth 2

Joan E. Habel Quilt Festival 5

ntenance of Quality in Processed Fruits and Vegetables 6

etable Storage Systems 9

ding Cereals Right After Snowmelt 12

Family Farm 14

Month with the QWI 17

Editorial

4-H: It's More than Cows and Cookin'!

It's more that "cows and cookin'", it's more than attending a calf rally or a project meeting. What is "it"? In Quebec, "it" is actually "they" — the Quebec Young Farmers and the Cercles de jeunes ruraux working together for a better life for the youth of the province; this to be achieved by the physical, emotional, and social development of the young people, thus improving the lifestyle of everyone they influence.

This development of such model young adults may sound like an almost unattainable goal, but these ideals can be achieved and there are success stories in Quebec, indeed, in all of Canada, to attest to this.

In 1913 what was then the 4-H program in the United States took root in the tiny town of Roland, Manitoba, when a professor at the Manitoba Agricultural College gave a handful of interested boys and girls a dozen eggs from purebred hens, a quantity of potatoes from certified stock, and 300 kernels of the best three varieties of fodder corn.

During that warm summer, these young people cared for their projects and in the fall joined other rural youth and adults in competition at Roland Fair. What a happy relationship that was that began 70 years ago. To this day, part of the commitment of 4-H youth has been their produce displayed with pride at fairs, from the smallest fair in rural Canada to the Canadian Exhibition.

Initially, the program was called the Boys' and Girls' Club but in 1952 the term 4-H was adopted. A nationwide coordinating body was put into place in 1933: the Canadian 4-H Council will celebrate its Golden Anniversary in 1983. There is much reason to rejoice at this special occasion. From coast to coast, literally hundreds of thousands of young Canadians have benefited from the principles of the program which are as diverse as the 10 provinces in which it operates, as personal as the leaders and members who make up the clubs, as universal as the 80 countries in the world where 4-H is part of a way of life.

Rural youth clubs are alive and well and thriving in Quebec. In over 30 years young Quebecers have been able to participate in the national and international programs administered by the Canadian 4-H Council. With a budget of over $1,000,000 in 1981, the Council administered nine programs involving over 1,500 young Canadians. Eight Quebec delegates attended the National 4-H Conference in Toronto; five volunteer leaders attended their own conference at the same time. Six delegates spent five days in Ottawa at a National 4-H Citizenship Seminar. A full complement of Quebec delegates benefited from the exchange programs: nine delegates visited each of the other provinces in the Interprovincial 4-H Exchange sponsored by the Royal Bank of Canada, and one young person participated, to represent Quebec, in each of the following: the United Kingdom 4-H Exchange, funded by Shell Canada Limited, the National 4-H Conference in Washington, D.C., sponsored by Aquitaine Company of Canada Ltd. (now Canterra Energy Ltd.), the John Deere Limited's 4-H Summer Work Exchange, and the National 4-H Careers Conference in Winnipeg funded jointly by the Canadian Imperial Bank of Commerce, Westeel-Rosco, and the Canadian Aberdeen Angus Association. One young lady received a $1,000 scholarship to further her education, thanks to the

generosity of the Canadian National Exhibition.

Open House Canada travel exchanges have been administered by the Canadian 4-H Council since 1977. What an educational opportunity for those who participate; what better way to learn about the lifestyle, culture, and economy of our country than by a living experience.

The Quebec Department of Agriculture has always supported the Canadian 4-H Council and these grants have enabled the Council to offer the opportunity to young residents of Quebec to take part in its programs. Through a cooperative effort between the Quebec Young Farmers and the Cercles de jeunes ruraux, equal opportunity is provided to French and English alike.

All those committed to the principles and ideals of 4-H in Canada salute Macdonald College, its Extension Department and Carole Ness, Provincial Coordinator for National 4-H Programs (see article, page 2), for their dedication to the rural youth of Quebec. Much remains to be done all across the country: new programs need developing; on-going programs need funding; all clubs need new members; retiring leaders need to be replaced. As long as we share a common goal we will survive and grow and change with the times.

Betsy Clarke
General Manager
Canadian 4-H Council

In keeping with our policy of freedom of expression, the opinions expressed are those of the author's and not necessarily of the Journal.

Canadian 4-H

An Open Door for Quebec's Rural Youth

by Carole Ness
Provincial Coordinator
National 4-H Programs

"Learn to do by doing" is the 4-H motto, and across Canada members of some 6,000 4-H clubs are doing that every day.

4-H is a rural youth movement that has been in Canada since 1913. Projects include anything from growing carrots to public speaking to exhibiting a dairy calf, but the emphasis in any 4-H project is on learning. By helping members to acquire a positive attitude towards learning, 4-H helps them to expand their knowledge and develop practical skills. Members learn to work together, to develop leadership qualities, to make decisions, and to accept responsibility. For such an educational program to be effective, it must be fun, and 4-H activities are notoriously filled with laughter, good natured teasing, and practical jokes.

Rural youth programs have been in existence in the province of Quebec for a long time. Several clubs have celebrated their 50th anniversary, and some rural families are heading into their third generation of club members.

4-H emphasizes the mental, emotional, social and physical growth of members. The four areas of development are exemplified by "Head, Heart, Hands, and Health", the words from which the name 4-H is derived.

When speaking of rural youth programs, it is necessary to clarify the use of the term "4-H" in Quebec. In this province the name "4-H" was patented by a group of forestry and environmental clubs prior to the decision of the Canadian 4-H Council to adopt the name for rural youth clubs in Canada. Thus, while "4-H" became common usage in the other provinces, Quebec rural youth clubs had to adopt something else. French clubs in Quebec usually go by the name "Cercles de jeunes ruraux" while English clubs opted for "Young Farmers". Nevertheless, it is not uncommon to find older clubs in Quebec who still refer to themselves as 4-H. This local use of the name has never created any problems as it was really only as provincial rural youth associations were being formed that the old patent was brought to light.

There are two provincial rural youth federations in the province of Quebec which group together the 91 clubs dispersed throughout the province. These two organizations are considered by the Canadian 4-H Council to be the equivalent of 4-H in the other provinces, and it is from their memberships that delegates are selected to participate in National 4-H Programs.

The Quebec Young Farmers

The Quebec Young Farmers' Provincial Federation was created 13 years ago to provide a communica-

Social recreation and group animation are a big part of any conference. Back in Quebec after the National 4-H Conference, delegates Paul Laberge, Wanda Younge, Joy Cairncross and Angus MacKinnon share their newly acquired techniques.

The John Deere work exchange delegates seem like members of the family. Above: Coleen Fremlin from Ontario exchanged with Jim Kyle and is seen here working on Allen Kyle's dairy farm in Hemmingford and, below, relaxing with the Kyle family.

ion link between English rural youth clubs. Today it has expanded to include 16 clubs stretching from the Pontiac region to the Gaspé. The Federation's work is conducted out of the Extension Department at Macdonald College, and several provincial level activities take place each year. Major QYF projects for 982 include a Livestock Management Tour, a Leadership Conference, a Provincial Calf Rally, and ne Annual Meeting.

he Association de la jeunesse urale du Québec

April, 1981, a provincial rural outh association for French clubs fficially came into existence. The ssociation was named the Association de la jeunesse rurale Québec'' and was a result of a udy conducted by Laval University. its first summer of existence, the ssociation visited all 76 French ral youth clubs in order to survey eir needs and expectations. As a sult of this survey, the AJRQ is inating several projects for the com- g year. An information bulletin, to sent to all members, is one of e first priorities, and the AJRQ pes to be able to provide an ricultural project contest, leaderip training sessions, and several ner educational or exchange proams in the near future.

ior to 1976, responsibility for uebec's participation in National 4-H Programs, along with general support of rural youth clubs, was assumed by the Quebec Ministry of Agriculture. Unfortunately, in 1976, the government made a decision to concentrate their efforts on programs for an older age group. This decision left the rural youth clubs with no provincial administrative body. The Quebec Young Farmers filled this gap for the English clubs, but the result for the French clubs was a deterioration of already weak inter-club communications. Local clubs became isolated with no means of receiving information about opportunities available to their members.

The Canadian 4-H Council was concerned about the situation in Quebec as it became increasingly difficult to get a Quebec delegation at National 4-H Programs. In 1980 the Council contacted the Quebec Young Farmers, the only provincial rural youth organization in Quebec at the time, and invited them to the Annual Meeting of the Council.

Because the QYF believed that Quebec's rural youth had a right to benefit from National 4-H programs and, due to the fact that no one else had the interest or ability to act as coordinator in Quebec, they, with the support and assistance of the Macdonald College Extension

Department assumed responsibility for National 4-H affairs in Quebec.

Joanne Enright, QYF coordinator at the time, launched a 4-H awareness campaign in the province. A major portion of her time was devoted to the basic task of locating the various clubs in the province. She established a strong contact with the AJRQ as it was taking shape and sent press releases to rural and agricultural media in both French and English. Selection committees were set up, and Quebec rural youth began to see the tremendous opportunities available to them beyond the local club level.

As the project progressed, it became evident that a full time employee was needed to coordinate National 4-H Programs in Quebec. In May, 1981, the author was hired to act as Provincial Coordinator for National 4-H Programs.

Quebec is entering a new phase in the development of rural youth programs. For the first time in years, a good communications system exists in the province. Such a system must include good contacts and administration at the local, regional, provincial, and national levels. Finally, through the hard work of the QYF and AJRQ, the gaps in this structure are being filled for both French and English clubs. Quebec now knows exactly how many clubs exist in the province and who to contact for each one. The QYF News Spreader sends information into the homes of all English club members and, with the launching of the AJRQ newsletter in March, a direct contact with every French member will be established as well. This means that the coordination of National Programs can now be done much more efficiently and completely as everyone is involved.

Perhaps the biggest boost to the revival of rural youth and National 4-H Programs in Quebec is due to the enthusiasm of the delegates themselves. Without the interest and hard work of club members, any provincial structure would be doomed to failure. The fact that local clubs have survived regardless of the ups and downs in provincial level support is proof that this is not the case in Quebec.

These rural youth delegates from Quebec met young people from across Canada, the United States, and Great Britain at the 50th Anniversary National Conference in Toronto last November. Back row, left to right, Gérald Alie, Paul Laberge, Luc Montour, Ludo Van Agtmael, Angus MacKinnon. Front row, Wanda Younge, Brigitte Hébert, Jack Redden, President, Canadian 4-H Council, Joy Cairncross, and Carole Ness, staff delegate.

Delegates to the Volunteer Leaders' Conference test Japanese cuisine in Toronto.

Wanda Lacy, delegate from P.E.I., on the Interprovincial 4-H Exchange, poses for a portrait in Old Montreal.

What is a National 4-H Program?

Each year the Canadain 4-H Council offers nine national or international programs for 4-H members across Canada. In her editorial, Betsy Clarke, General Manager of the Canadian 4-H Council, speaks of Quebec's participation in the five conferences, three exchanges, and the scholarship program. What exactly goes on at these events?

For most delegates, the first of many new experiences is the Quebec delegate orientation session and send-off banquet usually held in a large Montreal hotel. If they are conference delegates, the next day they experience what could be their first plane ride and arrive in a new city. A sea of 4-H name tags and friendly faces sets the scene for the reception area as delegates and staff search out their roommates, swap provincial pins, and discover that the girl from Alberta is a second cousin to a neighbour's daughter's best friend. Small world, isn't it?

As the week progresses, delegates discover that the educational part of the conference has a lot to offer as well. The guest speakers are of consistently high calibre and discussion groups always seem to generate input from all delegates. Who would have thought that the shy kid from Quebec would be up in front of 150 people giving a discussion group report. He didn't believe he could do it, but there he is, and he's doing a great job. The 4-H philosophy is to treat young people as intelligent adults and to expect the most from them. They rarely fail to live up to these expectations, and the amount of self-confidence, leadership ability, and personal development that can be gained during one conference is incredible.

Of course, 4-H conferences are not all work. Social events, sightseeing, games, singsongs, and getacquainted exercises play an important role in creating a casual and fun atmosphere. That same shy delegate who gave the report during the afternoon just may know something about how his staff member's bed got short sheeted, or why the conference director is missing all his socks! He could also be the same delegate with a tear in his eye as he says his goodbyes on the last day. How did the week go by so fast?

National and international 4-H exchanges take a slightly different approach to education than do the conferences. Travel and first-hand experience of a different lifestyle is the technique used rather than a speaker-workshop setting. Delegates return from their trip with a broader view of Canada and its varied agriculture, lifestyles, and cultures. Those delegates who travel abroad have the added dimension of becoming good will ambassadors for our country. They learn about 4-H in another area and pick up new ideas to try out at home. A 4-H exchange can be an eye-opening experience for many who could not otherwise travel at this point in their lives.

What Lies Ahead?

The future of rural youth programs in Quebec is dependent on a team effort by all those involved. From the Canadian 4-H Council to Macdonald College, the AJRQ, the QYF, and the local clubs, Quebec has a winning team right now who work well together as each aspect grows individually.

There is always more that can be done. Vast areas of the province have no clubs whatsoever, new types of clubs can be formed, funding is always difficult, and staff don't have enough hours in a day. Nevertheless, in general, rural youth clubs in Quebec are rapidly increasing in quantity and quality.

The more that members get out of these programs, the more they put back in and, right now, everyone involved is putting in a lot. Even more important, the more each member contributes, the more he gains for himself and *that* is precisely the idea behind the 4-H motto, "Learn to do by doing."

THE JOAN E. HABEL QUILT FESTIVAL

A quilting "bee" on the corner of Dorchester and Crescent in downtown Montreal? No less unusual than an executive meeting at the crossroads of the Johnson and the Richmond-Waterloo highway in Melbourne Ridge. A woman of many parts, equally at home in Montreal or Toronto, her birthplace, on the back roads of the Eastern Townships or the academic halls of the University of Toronto or Macdonald, in a board room discussing a new venture or the kitchen designing a new pattern, Joan Habel is being remembered by those who knew her in a unique way that we feel would truly please her, and this remembrance should bring pleasure to countless others. A Quilt Festival — the Joan E. Habel Quilt Festival will be held at the YWCA in Montreal, Quebec, from 11:00 a.m. to 8:00 p.m. on Saturday, June 19, and Sunday, June 20, 1982. The Montreal YWCA is at 1355 Dorchester Blvd. West.

This festival, the first major quilting show to be held in Montreal, is being held in memory of Joan Habel who died on December 1, 1981, after several years of illness. Married to JAY Habel, Joan had already raised a family of five when she returned to studying and graduated from the Diploma in Agriculture Program at Macdonald in 1974. Upon graduation, she was employed by the Extension Department at Macdonald as Executive Secretary of the Quebec Farmers' Association, a position she held until she and her husband took up permanent residence in the Townships. Joan Habel was a member of the board of governors of the Montreal YWCA and chairman of its World Development Committee 1979-1981. Funds raised will be used for the international development of the YWCA.

The Quilt Festival will comprise an exhibition and sale of quilts, quilted articles, and quilting supplies. There will also be door prizes, refreshments, and six workshops. The workshops, which will be held on Saturday, are: "Folded Star"; "String Quilting"; "New Directions for Log Cabin"; "Colour, Design, and Texture"; "New Designs from Old Patterns", and "Pictures in Applique".

Included in the exhibition will be several quilts loaned for display by the McCord Museum. One of these, "The Prince of Wales's Plumes" was made in the Eastern Townships to commemorate the Prince's visit in 1860. To our knowledge, this is the

(Continued on page 16)

Maintenance of Quality in Processed Fruits and Vegetables

by Professor T. Smyrl
School of Food Science

Fruits and vegetables play many importants roles in the diet. Not only do they serve as excellent sources of vitamins, especially vitamin C, but they also contribute variety, flavour, and freshness. Fruits and vegetables consumed in Quebec are available in three main forms: fresh from domestic production, fresh imported, and processed. The processing of these food commodities, which now amounts to a 1.6 billion dollar a year industry in Canada, ensures a continued supply when domestically grown fresh produce is not available or when an alternative to high priced imported produce is desired.

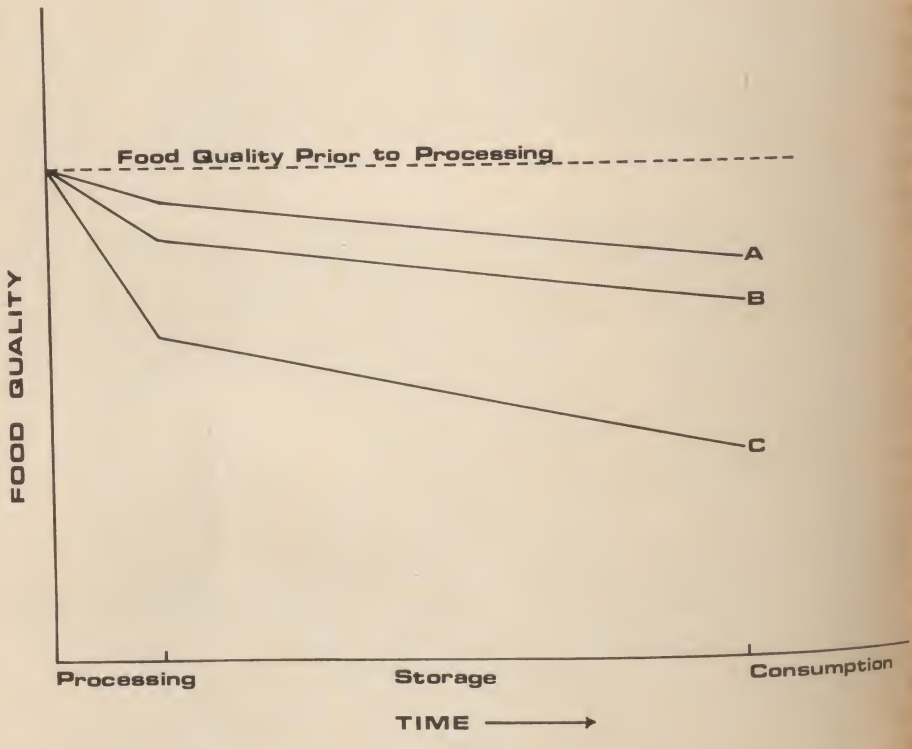
Deterioration of Fruits and Vegetables after Harvest

The majority of the horticultural crops that we grow for food are perishable commodities. From the time of harvest the raw plant materials may undergo gradual deterioration by one or a combination of processes. One type of deterioration may result from chemical reactions of natural food components; for example, proteins, sugars, fats, pigments, vitamins. Often the speed of such undesirable chemical reactions is greatly enhanced by a group of compounds called enzymes which are naturally present in the raw material. Microbial deterioration occurs as a result of the growth and reproduction of microorganisms such as bacteria, moulds, and yeast. If these types of deterioration are allowed to progress, the quality of the produce will gradually decline to a point where the food is no longer edible and could pose a health hazard if consumed in this state.

The ultimate goal in processing for preservation is to treat the raw agricultural products in an appropriate manner to stop the reactions which lead to product deterioration. Since microbial food spoilage represents the greatest single cause of food loss, the preservation process is primarily aimed at counteracting this deterioration. Obviously the processor must be concerned with the quality of the processed goods as well. Not only must the product be stable with respect to deterioration but it should also possess as much as possible the quality attributes normally associated with the fresh product. The quality attributes of any food, including fruits and vegetables, may be divided into four main areas: flavour, nutritional value, colour, and texture. These four food quality characteristics are interrelated since, for example, a product which is nutritionally sound, appealing to the eye and also possesses a pleasant mouth feel will remain uneaten if it has poor flavour. In addition, if the processor fails to maintain an adequate level of product quality in his processing operation, the consumer will not be inclined to purchase the product again.

Important Factors in Processing

Today the food processing industry is very concerned with the amount of energy required for the preservation process. This fact may play an important role in determining which method will be used to preserve a particular fruit or vegetable product. The accompanying figure illustrates the influence of several preservation techniques (A, B and C) and subsequent storage on the overall quality of a food product. This figure points out several important facts. First of all, the quality of the food before processing will have an influence on the quality of the processed product.



Secondly, the overall quality of the food may decrease as a result of the processing operation. The reason for this is that the techniques available to the processor to stop the various degradative processes are often non-specific. In other words, food constituents, such as proteins, sugars, pigments, fats, vitamins upon which the four quality attributes are based, may undergo modification as well. The figure also shows that different processing and storage procedures will influence food quality differently. Process "A" yields a product of the highest overall quality; the quality resulting from process "B" is slightly diminished, and, "C" product is of substantially lower quality. In the event that process "A" is energy and equipment expensive, process "B", which produces a product of slightly lower quality and which may be more favourable in an economic sense, will be chosen. This is not to say that fruits or vegetables processed by method "A" will not be found on the market, but the purchase price will undoubtedly reflect the higher production costs. Products of lower quality obtained by method "C" may be utilized in food formulations where other ingredients, for example, spices, sugars, colouring agents, will compensate for the reduced quality.

The food industry is constantly searching for better and more efficient ways to utilize our agricultural products. The objectives are twofold: to increase the quality of the preserved product and to decrease the energy requirement of the preservation process. Obviously, it will be of benefit to all if both criteria can be satisfied simultaneously. The remainder of this article will involve an overview of some common methods which the food industry uses to preserve fruits and vegetables and how recent technological developments have been implemented to produce processed fruits and vegetables of high quality. Since one of the most important dietary functions of fruits and vegetables is to supply necessary nutrients, this aspect will be emphasized. Indeed the vitamin content of a food is often used as an indication of the overall food quality.

In the time period between harvest and delivery to the processing plant, the combined effects of environment (temperature, rough handling, and transportation delays) may lead to loss of product quality. Undesirable chemical reactions may be initiated due to bruising and mishandling leading to the destruction of certain vitamins (vitamin C and vitamin A). In most instances, however, the handling of fresh fruits and vegetables destined for the processing plants is such that loss of product quality is small. At the processing plant the produce must be washed to remove soil and extraneous matter. Quick washing in cold water does not significantly diminish product quality. After washing the produce may be trimmed, peeled, and subdivided. Trimming and peeling may lead to significant vitamin loss; for example, the vitamin C levels are higher in the apple peel than in the cortex which might be eventually processed into apple slices. Subdivision into slices or cubes exposes more of the food surface to potentially harmful factors, such as oxygen which also stimulates undesirable chemical reactions and water which can extract water-soluble vitamins from the product. However, the speed at which these processes are carried out allows little opportunity for product degeneration.

The Blanching Process

Blanching of fruits and vegetables plays an important role in maintaining the product quality; consequently the product is blanched prior to the final preservation step, be it by freezing, drying, or canning. The blanching process serves several useful purposes. Blanching destroys the plant enzymes which, in effect, stops further tissue respiration. The plant enzymes, unless destroyed, have the capability of rendering the food unpalatable through the formation of off-flavours, off-colours, and off-odours. In addition to destroying enzymes, blanching destroys some of the bacteria associated with the food, sets colour (especially in green vegetables), and softens the product so that packing into tin cans is facilitated. During blanching, the food is scalded for a brief period either by immersion in boiling water or by being exposed to steam. Because the blanching step does involve the application of heat, some aspects of product quality are adversely affected. Many vitamins, such as vitamin C, are sensitive to heat and can be chemically destroyed. Blanching of vegetables by immersion in hot water also allows for the physical loss of water-soluble vitamins by leaching. The use of steam to blanch vegetables has, to some extent, alleviated the problems of leaching losses associated with hot water blanching.

Food scientists working at the Agriculture Canada Research Station in Kentville, Nova Scotia, have recently developed a new vegetable blanching system which has overcome many of the disadvantages of the traditional one. Their process is based on the IQB (individual quick blanch) method in which vegetables are spread in a single layer on a conveyor and then treated with steam. This unit is capable of processing 10,000-12,000 pounds of blanched vegetables per hour, while reducing the energy requirements for the blanch by a factor of 20 in comparison to conventional steam or hot water blanching techniques. In this process 90 per cent of the vitamin C is retained in the blanched vegetable which attests to the high quality of the product.

Dehydration

Dehydration is another method used to preserve the fruit and vegetable crop. The term "dehydration" refers to the controlled removal of water from the food in such a way that when water is added back to the food the quality of the rehydrated product will be similar to that of the original food. It has been previously noted that the decline in the quality of fresh produce is due to microbial action or chemical reaction. Both modes of product decline are very dependant on the amount of water present in the food. Thus if the food is transformed to a dry state, the incidence of these degradative processes is greatly reduced. Since fresh fruits and vegetables do contain a large amount of water, financial benefits are realized in the transport and storage of dried produce because of the weight reductions. Also, dried goods do not normally require refrigeration. Traditionally, the dehydration process is carried out by passing hot, dry air

over the food to evaporate the water. Heat, as noted in the discussion of blanching, and oxygen in the air are important factors which may adversely influence the food quality. To overcome the problems associated with heat and oxygen during the dehydration process, techniques such as "vacuum drying" and "freeze drying" have been developed. In the "vacuum drying process", the blanched product is placed in a vacuum chamber (no air) where the water evaporates from the food quickly and only a mild heat input is required to accomplish drying. Since only a mild heat treatment is required for the drying process and the amount of oxygen in contact with the food is reduced, dehydrated products of good quality are obtained. Dried fruit and vegetable products of excellent quality can be produced by the "freeze drying process". In this process the product is frozen solid and then placed in a vacuum chamber. When the frozen produce is placed in the vacuum chamber, the water is lost from the food by the process of sublimation; that is, ice in the food is directly converted to vapour. The low temperature employed and the absence of destructive oxygen in the freeze drying process ensures that any degradative reactions, leading to quality decline, will be negligible. Unfortunately, however, the freeze drying process is extremely expensive in terms of energy and equipment; thus fruits and vegetables dried in this manner are very expensive. At present, the use of freeze dried products are limited to specialty foods, such as supplies for hikers and backpackers, or in the production of gourmet foods. Since water is removed to stabilize the food product from deterioration, it is essential that the product not pick up water during storage, such as from the air on a humid day. To ensure that the product does remain dry, in-package desiccants are employed to preferentially absorb the water which may find its way into the package.

Freezing

Fruits and vegetables are commonly preserved by freezing. At normal freezing temperature (-20°C, -40°F) chemical reactions proceed very slowly and microbial activity is arrested. Freezing *per se* does not injure vitamins, but other food quality attributes may be adversely affected. In this respect, product texture is of particular importance. Since fresh fruits and vegetables contain 80-90 per cent water, the water naturally turns into ice as the food freezes. If the freezing step is being performed too slowly, large sharp ice crystals form. If these crystals grow to a sufficiently large size, they can puncture the walls of the fruit or vegetable cells. Physical disruption of such structural components will cause a loss in firmness and, upon thawing, a soft, mushy product is obtained. To overcome textural changes in fruits and vegetables associated with the slow freezing process the food industry has adopted ultra-fast freezing procedures. During the ultra-fast freezing treatment, water in the produce will be transformed into small ice crystals which are not capable of tearing the cell walls and hence the produce will still be firm when thawed. To effect very fast freezing the food industry employs techniques such as "cryogenic freezing" where products are immersed in or sprayed with materials such as liquid nitrogen (-196°C, -310°F) or dry ice (-78°C, -108°F). "Immersion freezing" is another technique which is becoming more utilized for fruits and vegetables. In this process fruits and vegetables are plunged directly into very cold sugar or salt solutions whereby the products freeze very quickly. Particularly destructive to product quality are high temperatures of frozen storage and the fluctuation of temperatures during storage. Generally, maximum product quality is maintained when produce is stored at low freezing temperatures. More damaging, however, to product quality are intermittent freeze-thaw cycles. Thus, it is of primary importance that frozen foods be stored and passed into distribution channels without experiencing violent fluctuations in temperature.

Canning

The most common technique to preserve fruits and vegetables is by canning. The principles upon which canning is based are: (1) to pack foods in airtight containers (cans, jars, bottles) and (2) kill all contaminating microbiological flora in the food by the application of heat. Because fruits and vegetables generally differ with respect to their acidity (fruits, acidic and vegetables, non-acidic), the heat required to ensure an adequate microbial kill will be different in each case. Canned fruits, for example, may only require heating to 100°C (212°F) for 8-12 minutes, depending on the can size, whereas less acidic canned vegetables require a higher temperature treatment at 121°F (250°F) for 20-120 minutes, the time, once again, depending on the can size. The purpose of this vigorous heat treatment for canned vegetables, in particular, is to destroy *Clostridium botulinum* bacteria. If this bacterial species is not destroyed, the deadly botulism toxin may be produced within the can. Obviously a heat treatment of this severity, which is essential to guarantee the safety of a canned product, may adversely influence some of the heat sensitive quality attributes of a food. Since the early 1960s the food industry has been evaluating the sterilizable flexible pouch as a possible replacement for the tin can. These pouches, which are composed of plastic and aluminum foil, are of a flat rectangular shape. Because of the flat shape, the pouch contents can be heated to the temperature required to kill the *Clostridium botulinum* much more quickly (30-40 per cent less time) than cylindrical tin cans containing the same weight of product. As a result of the reduced heating time, changes occurring in the food, which influence food quality, are substantially lessened, and the energy required for the process is reduced at the same time. As the consumer becomes accustomed to the concept of foods packed in pouches rather than in cans, and with the development of more sophisticated equipment and less expensive pouch materials, the flexible pouch will effectively compete with the tin can in the future.

(Continued on Page 16)

Vegetable Storage Systems

by Professor Vijaya G.S. Raghaven
Department of Agricultural Engineering

In Quebec vegetable production is limited to one crop per year and, therefore, long-term storage is a necessity for the vegetable industry. The quality and consequently the storage life of vegetables are reduced by the loss of moisture, decay, and physiological breakdown. These are directly related to storage temperature, gas composition, relative humidity, and air circulation.

The storage systems available are: a) Conventional cold room; b) Jacketed room; c) Filacell room, and d) Controlled atmosphere room.

Among these, the conventional cold room system is known to provide the required constant temperature but not a very high relative humidity and modified gas composition. This system is suitable only for short-term storage.

In the Jacketed room system, the storage room is cooled by air flowing through an enclosed space or jacket surrounding the wall, floor, and ceiling rather than by direct circulation of air through the room. A cross-sectional view (Figure 1) shows the air circulation path and other pertinent features. The cold air from the evaporator does not come into direct contact with the produce. Consequently, the relative humidity in the room is not directly dependant on the performance of the refrigeration system but on the coldest wall surface, and hence on the quality of circulated air in the jacket (Lentz *et al.*, 1971). The relative humidity in this system can be maintained at saturation levels. The system has shown benefits for long-term storage of carrots with least reproduce dessication and loss of quality. There are many installations

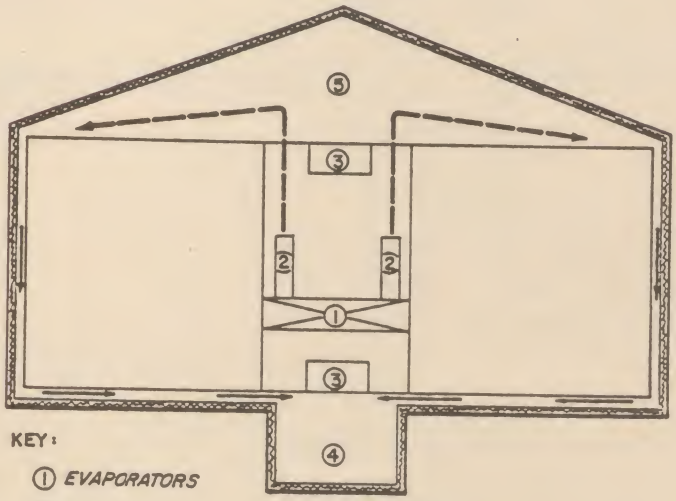


Figure 1. Schematic cross-sectional elevation of a Jacketed Room (Lents *et al.* 1971).

in Quebec which have satisfied many growers in their requirement of long-term storage. The main disadvantage of the system is that it is too expensive to build because of the complicated floor design involved.

In the Filacell system, air supplied to the storage space is completely saturated. The schematic diagram is shown in Figure 2 which consists of the flow diagram of the air path. A counterflow arrangement is established having water sprayed on the filaments and moving downwards, while air moves upward and becomes saturated before entering into the storage space at 3 (Figure 2). Air exiting from the storage space is recirculated along the path 7-4-5-2-3-1-7 as shown. In existing commercial installations, the relative humidities have been found to be above 97 per cent. Among the advantages of the Filacell system are the high relative humidities combined with good air circulation and the possibility of adapting it to the controlled atmosphere storage (Krahn and Darby, 1971). It should be pointed out that temperatures below freezing cannot be obtained due to ice that would result on the web. This is the main disadvantage of the system.

In controlled atmosphere (CA) storage systems, oxygen (O_2) content is lowered and carbon dioxide (CO_2) content is increased. The modification of the atmosphere in the storage environment of the produce would be justified if a better quality produce was the result of such a modified atmosphere storage than if stored in the conventional way for the same period. Among the advantages of controlled atmosphere are the chlorophyll preservation due to high CO_2 and a substantial reduction, up to 50 per cent, of the respiratory activity when low 0_2 concentrations are used (Bohling *et al.*, 1977). This implies better appearance and lower weight losses. Also, CA storage has been found to considerably reduce bacterial infestation and restrain damage to the outermost part of the

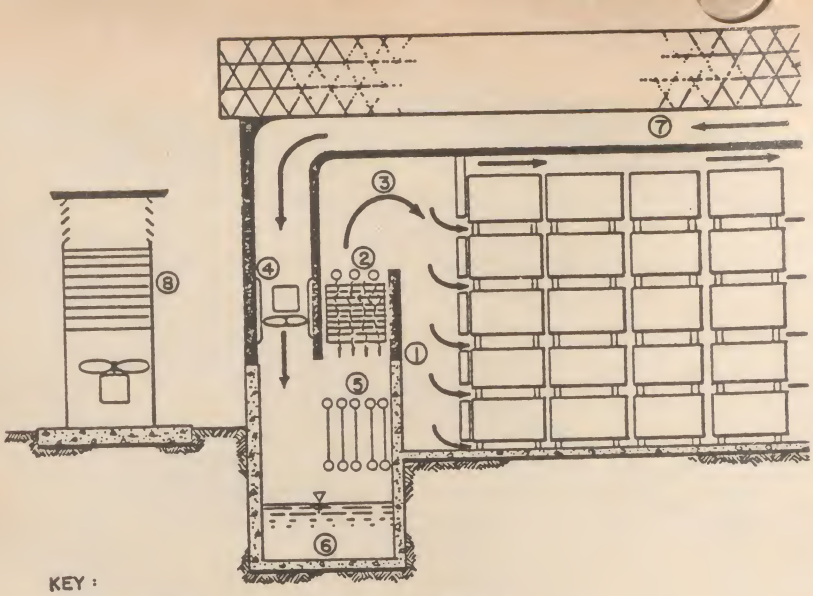


Figure 2. Schematic diagram of a Filacell System.

vegetables (Henze, 1977; Bohling and Hansen, 1977).

There are many ways to provide the desired gas composition in the storage environment; i) the artificial method includes many types of CO_2 scrubber, atmosphere generators, and the sub-atmospheric pressure system, ii) the natural method includes membrane system and produce package system where the gas composition is obtained from an equilibrium of the vegetable respiratory activity and the storage environment.

The membrane system is defined as a sealed chamber equipped with a silicone membrane of selective gas permeability. This system has the ability to make use of the available gases generated by the produce inside for the maintenance and modification of the atmosphere within the chamber. This system is now being studied at Macdonald for storing cabbage, celery, and rutabaga and at Centre de Recherches en Sciences Appliquées à l'Alimentation (CRESALA) for storing apples. The membrane system outperformed the conventional cold room system by providing minimum mass loss, less loss of quality, and longer storage period. Further experiments are being conducted to determine respiration characteristics under varying O_2/CO_2 proportions

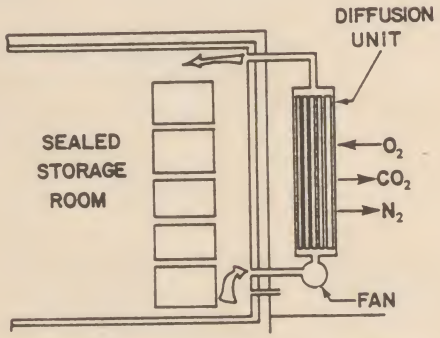


Figure 3. Schematic diagram of a silicone membrane gas exchange system. (Marcellin 1978).

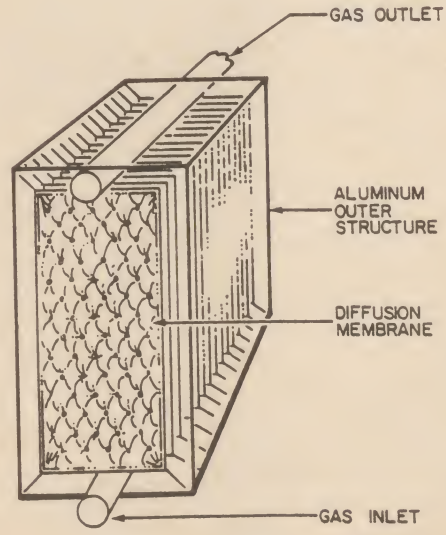


Figure 4. Details of a silicone membrane gas exchanger.

and also to determine ideal gas composition required for better storage of celery.

The commercial application of the silicone membrane system is the Atmolysair system in Quebec, where air from the storage room is circulated on one side of the membrane framework while the other side of the membrane framework is in contact with normal air as shown in Figure 3. (Marcellin, 1978). Diffusion of CO_2, 0_2, and N_2 takes place through the silicone membrane. The framework consists of several fixed dimension membrane frames arranged in order to provide a continuous surface available for the gas exchange, and supported by a metallic structure, as shown in Figure 4. Frames can be added or removed to suit the desired storage capacity. Air is circulated with the help of a small fan which also creates a slight pressure on one side of the membrane. This system is being studied at St. Lin for a 236-tonne capacity cabbage storage.

The advantages of the membrane system are:

i) Desired proportions of CO_2 and O_2 can be maintained;
ii) High relative humidity close to saturation can be obtained;
iii) Easy to adapt to a conventional cold room system;
iv) Provides conditions required for long-term storage.

The disadvantage of the system is that there are not enough respiration data of various commodities available to meet the design requirements of the system.

References

Bohling, H. and H. Hansen, 1977. Acta Horticulturae 62: 49-54.
Henze, J. 1977. Acta Horticulturae 62: 71-77.
Krahn, T.R. and D.E. Darby, 1971. Can Soc. for Hort. Sci. Annual Meeting. 9 pp.
Lentz, C.P., L. Van den Berg, E.C. Jorgensen and R. Sawler. 1971. Can. Inst. Food Technol. J. 4(1): 19-23.
Lutz, J.M. and R.E. Hardenburg. 1977. USDA Agr. Handbook. No. 66. 94 pp.
Marcellin, P. 1978. Seminaire Intl. Montreal. 300 pp.
Raghavan, G.S.V., R. Bovell and M. Chayet. 1980. Trans. of the ASAE. 23(6): 1521-24.
Raghaven, C.S.V., S. Tessier, M. Chayet, E.R. Norris and C.T. Phan. Trans. of the ASAE (in press).
Tessier, S. and G.S.V. Raghavan. 1980. Progress report for the Québec Ministry of Agriculture. 65 pp.

We're committed to your future.

At the Secretary of State, we believe in projects that foster the rich cultural heritage of Quebec's anglophone communities. Projects that enhance cultural awareness and traditions, that maintain and develop communications links, and that deal with issues of a socio-economic nature to suggest a few. Projects where the Secretary of State can either help out financially, or provide professional advice.

The Secretary of State has sponsored programs to bring Quebec's young people together to discuss the challenges that lie ahead for their generation, to encourage tomorrow's young farmers to develop leadership skills and to bring live theatre to the children of isolated communities. These are just a few of the projects that have been developed by Quebec's anglophone communities.

Because we recognize the significant contribution of anglophone Quebecers to the Canadian society as a whole, the Secretary of State is here to help the important projects in these communities bear fruit.

An important project should bear fruit.

For more information, contact: The Secretary of State,
1080, Beaver Hall Hill,Montreal, Quebec, H2Z 1S8. Tel.: (514) 283-5699 or call no charge 1-800-361-7418

Secretary of State / Secrétariat d'État

Canada

Seeding cereals Right after snowmelt

by G.M. Barnett[1] and J.E. Comeau
Ferme Expérimentale Fédérale
Agriculture Canada
La Pocatière, Que.

Seeding wheat by air at La Pocatière on May 1.

Seeding cereals early

Cereal yields and quality are influenced by many factors but probably the most important is date of seeding[2] (Figure 1). After about May 10 in the Lower St. Lawrence and in the Townships (before this date on the Montreal Plain), cereal yield and quality drop rapidly. For two to three weeks after snowmelt the soil is too wet to work; however, grass will generally start to grow during this period. Would it be advantageous to capitalize on this period for cereal, keeping Figure 1 in mind? In order to do so, seeding would have to be done by air.

Aircraft in agriculture

The airplane was first used in agriculture to dust cotton fields with calcium arsenate in the southern United States in 1922. Since then, it has been widely used to apply insecticides and herbicides, materials requiring low application rates. Very little seedling has been done by air in the past. For example, only 2.5 per cent of the area seeded in 1957 in the U.S. was by air. However, the light airplane has often been used to seed difficult terrain. The Australians and New Zealanders have long used the airplane to reseed and fertilize pastures. Recently the airplane has been used in cereal trials in Britain, East Germany, and Holland with qualified success. What are its possibilities for early seeding?

La Pocatière Experiment

To evaluate aerial seeding right after snowmelt, wheat was seeded by air (Piper Paunee C) and conventional disc-seeder (MF 33) in 1975; oats by the same two methods in 1976: and oats, wheat, and barley by air, disc-seeder, and fertilizer-spreader (Calhoun four wheel) in 1977. Parts of the above areas were disced and/or spring-tooth harrowed. The site necessarily had been ploughed and disced the previous fall.

Results

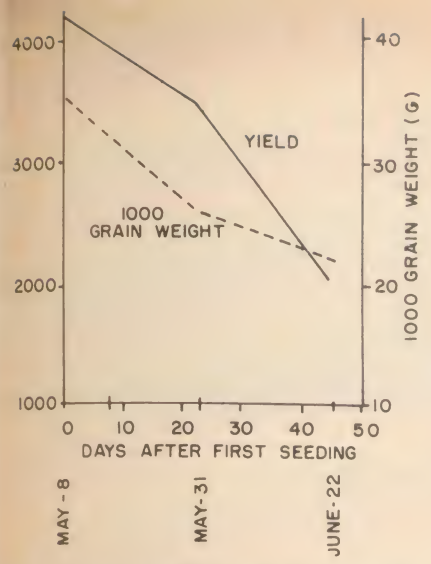
Even though the airplane seeded at about 100 miles per hour and at 30 feet in altitude, neither oat, wheat, nor barley seed penetrated wet soil or even snow. The subsequent exposure of the seed led to a rapid decline in viable seed at the surface. Birds, particularly the migratory snow bunting, found the sown fields much to their liking as a feeding station in the early spring when food was scarce. They had a preference for oats and extracted the kernel, leaving the hull. This resulted in almost complete loss of the oat seeding with a germination rate of five per cent. All sowings suffered considerable loss to birds. Had fields larger than the two to five hectares been used, probably the relative loss would have been less.

Germination

It logically follows that germination rates were much lower for air-sown cereals (Figure 2) than for those sown later by ground methods. However, it is clear from Figure 2 that harrowing has a very positive effect on seed germination — even for drilled grain. No harrowing effect was produced on air-sown cereals but a marked effect occurred for spreader-sown cereals. This indicated the necessity of covering broadcast seed. If air-sown seed could have been covered at seeding time, germination would have been as adequate as it was for spreader-sown seed.

---

1. Present address: Research Station, Agriculture Canada, Lennoxville, Québec, J1M 1Z3.
2. See "Profit with cereals", Macdonald Journal 35, No. 8: 3-4, 1974.



gure 1. Effect of seeding date on yield and ain size of Champlain barley at La ocatière. (Barnett, Comeau, and Rioux, unublished.)

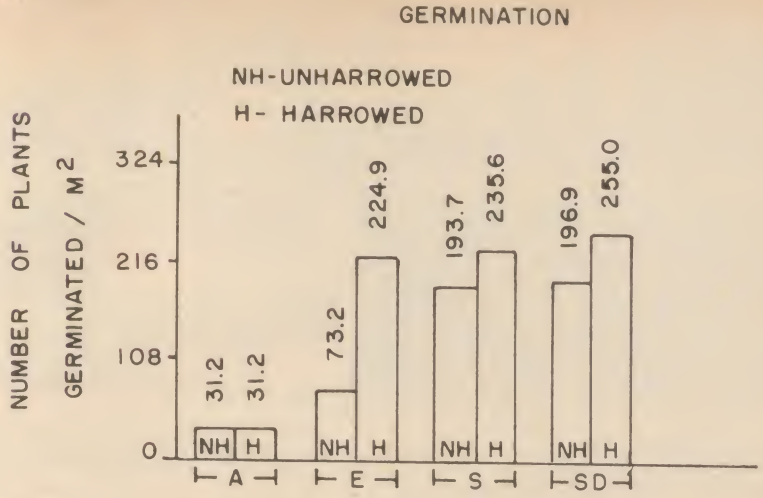


Figure 2. Oats, wheat, and barley germination as affected by seeding method and harrowing. (A = airplane, E = fertilizer spreader, S = drill seeder, SD = drill seeder with prior discing.)

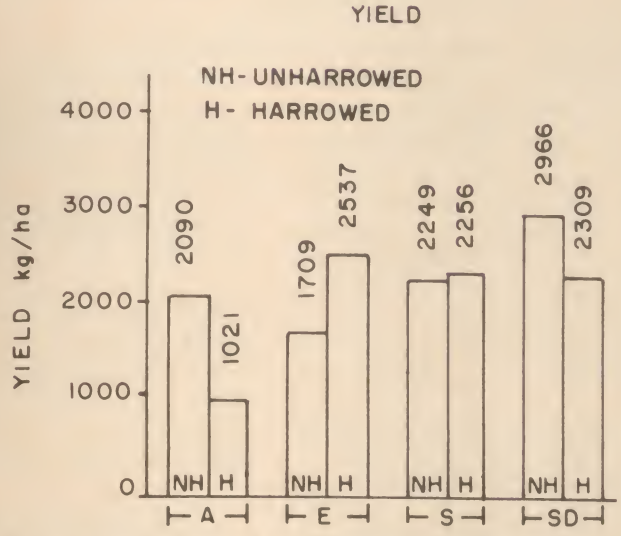


Figure 3. Seeding method and harrowing effects on yields.

ield

1975 wheat sown by air at 134 g/ha produced 2,475 kg/ha while at sown by disc seeder two weeks ter at 112 kg/ha produced 2,694 g/ha. In 1976 the air-sown oats was complete loss while the seeder-own oats produced 1,458 kg/ha. In 977 ground methods, when harrow-d, generally produced higher yields an those sown by air (Figure 3). It interesting to note that cereals oadcasted by fertilizer spreader nd harrowed in produced yields quivalent to drilled grain. It is also teresting to note that the unhar-owed air-sown grain produced asonable yields. Even though ger-ination was low originally, higher lering rates increased final popula-on. Where air-sown grain was har-owed two to three weeks after sow-g, plants that had already ger-inated were uprooted which caus-d this treatment to yield much less.

It is clear that there was no advantage in seeding cereals right after snowmelt.

Maturity

Air-sown cereals seeded on April 21 matured at the same time as ground-sown cereals. Unharrowed spreader-sown cereals were delayed nearly three weeks in maturity. Harrowing air-sown cereals three weeks after seeding retarded their maturity by a week. Even drilled grain matured five to six days earlier when the soil was harrowed before seeding. Harrowing, therefore, advanced maturity considerably.

Weeds

Air-sown cereals had twice the number of weeds as had ground-sown cereals. Harrowing reduced weed number as well.

Spring-discing

These trials were conducted on soils ploughed and disced in the fall. Spring-discing did not accord a significant increase in germination, yield, or maturity, although there was a slight increase, and there was a decrease in weed number. Because such an operation in the spring retards seeding[3], its necessity appears to be equivocal.

Speed-seeding

The airplane is very rapid, seeding a swath 50 feet wide at 100 miles per hour. Undoubtedly, where fields permit and the land is dry enough to harrow, it has a place — especially for large areas. A compromise would be the fertilizer spreader which seeds a 50-foot swath also. The drill-seeder is still the best instrument to seed cereals, but where there are many acres to sow and early seeding is to be capitalized upon faster means may be necessary.

Conclusion

It was clear that seeding cereals onto wet soil right after snowmelt was not advantageous. A light harrowing was very beneficial and if this operation must be done, the date of seeding will be determined not by the machine used to seed but by the date at which the soil is ready for a light harrowing. And this in turn is affected by the drainage system — in particular the surface drainage system.

3. It is said that each hour of seeding time is worth several hundred dollars.

The Family Farm

Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

PLEUROPNEUMONIA CAUSED BY *HAEMOPHILUS:* AN IMPORTANT CAUSE OF SWINE MORTALITY

For the past two years, Quebec hog producers have been facing a very serious problem, namely, pleuropneumonia due to *Haemophilus.*

This respiratory disease, specific to pigs, has spread very quickly and the traditional means of control have shown themselves to be less than effective. This is why the Division of Veterinarian Services of the Quebec Ministry of Agriculture, Fisheries, and Food has proposed various methods aimed at helping the weaner producer and the farrow to finish operator who wish to understand the status of the disease in their herds.

In this perspective the program advocated by the Veterinary Services of the Ministry will permit the reduction of the incidence of the disease in Quebec in addition to giving to the producers means of improving the health of their herd or to keep the herd exempt from the disease.

History of the Disease

Pleuropneumonia caused by *Haemophilus pleuropneumoniae* is not a new disease in Canada. Infection was reported in the western provinces in 1972 and 1973. During 1974 and 1975 isolated cases were diagnosed in Quebec.

Around 1977, the disease reached epidemic proportions in North America. It caused a lot of losses in southern Ontario, and it manifested itself later in Quebec where, since 1978, it has caused producers considerable losses.

Responsible Agent

Pleuropneumonia is caused by a specific bacteria attacking the swine species, *Haemophilus pleuropneumoniae.* The parasite lives only for a few hours outside of the animal. It does not resist treatment with ordinary disinfectants.

The bacteria lives mainly in the pharynx and tonsils of the pigs that are affected. An animal may remain a carrier of the disease for from four to six months on average.

Transmission

Pigs get infected by inhalation of the bacteria. A carrier pig, even if he doesn't seem sick, can transmit the bacteria to other pigs with which he is in contact. In an operation where the disease exists, close contact between pigs is no longer necessary. Following coughing and sneezing of these pigs, the air rapidly becomes loaded with billions of aerosol droplets containing the bacteria. These minute aerosols can remain in suspension in the air for a few hours. All the pens in the piggery can thus be infected. Furthermore, ventilation systems can carry contamined air from one piggery to another if they are close together.

As well, the nasal mucus from diseased pigs can be transported by clothing and can contaminate other pens or other piggeries. Vermin could also act as carriers of the germs between piggeries.

Factors Favouring the Spread of the Disease

— Productions in rotation:

They allow various lots of pigs of all ages to be in close contact in the piggery; this ensures the transmission of the bacteria from the older pigs to the younger ones.

— Buying of pigs from unknown sources:

The arrival of carriers of bacteria in the herd which was exempt from it can trigger off the infection. Furthermore, the introduction of sound animals in the infected area brings about identical results.

— Poor production conditions:

Stale and cold air, crowding, deficient sanitation, and the absence of adequate cleaning, washing, and disinfecting between two batches will favour the implantation and persistence of the infection.

Length of Incubation

The length of time between infection and the appearance of the symptoms varies. In certain cases, the incubation lasts for only eight to 12 hours. In other cases, it varies from a few days to a few weeks according to the immune state of the animals, their natural resistance, and production management.

Symptoms

In the very acute cases, it is possible to find dead animals one morning, while the day before they seemed to be in perfect health. In less acute cases, the pigs keep away

n the others, seem depressed, breathe more rapidly than nor-. They do not live for very long , at death, blood runs out of their trils.

hronic cases, the pigs survive their growth is retarded. At ughter, one happens frequently to e the adherence of the pleurs the lungs to the thoracic cage.

eased Animals

Quebec mortalities have been istered in pigs mainly from the inning of finishing until slaughter. an average situation being be-en 2½ to three months. In rare es, sows and suckling piglets die ause of the disease. The percent rtality can reach 40 per cent but average is between 10 and 15 cent.

atment

atment with antibiotics is recom-ded when the first symptoms of disease appear. Even though tality has been controlled in y enterprises, the use of an-tics has given questionable lts to date. There are many sons to explain this:

disease too far advanced;

presence of other respiratory in-ions;

bacteria resistant to the given biotic;

antibiotics which are not given in proper way.

erinarians recommend the ad-istration of injectionable an-tics rather than the use of dications in water or meal.

E PREVENTION PLEUROPNEUMONIA

ce vaccination against ropneumonia caused by *emophilus* has not been fected, the use of appropriate duction methods is the only effi-t way to prevent the spread of disease. Good management of sing and ventilation conditions vents the appearance, the gravi-and the persistence of ropneumonia caused by *emophilus* in hog production.

The buildings must be well insulated and the premises designed to efficiently control swine diseases. A step wise ventilation system is advocated.

What Must be Done

— Keep the enterprise as isolated as possible.

— Buy from a minimum of breeders. Ideally, become self-sufficient (closed production).

— Clean, wash, and disinfect the pens or the production areas after the departure of the occupants, be it the sow, boar, the weaned piglets, or the finished animals. This step must be followed by leaving the area vacant.

— Maintain as sanitary an environment as possible. Assure a minimum of continuous ventilation in cold weather. Heat if necessary. Adjust the ventilation system (thermostats, air intake, etc.). The ventilation system must ensure a sufficient and uniform intake of air. Clean the ventilators periodically.

— Favour the type of "all in, all out" production followed by a vacant period.

— Limit visits, particularly in the farrowing room and the nursery.

— Supply visitors (veterinarians, breeders, tradesmen, advisers, etc.) as soon as they enter the production area with boots as well as clean clothing which will remain in that area.

— Require visitors to dip their feet in a tray containing a recognized and clean disinfectant solution — and that before entering each of the areas. It is advisable to have only one entrance door which is kept under lock and key permanently and which is equipped with a bell.

— Use only clean material and instruments in the production area for the care of the animals and maintenance of the buildings.

— Transport the animals in clean vehicles belonging to the enterprise. Clean and disinfect after each use. Trucks belonging to someone else that serve to transport feed and animals must be the object of special attention.

— Insist on bulk delivery rather than in bags.

— Prohibit the entrance of animals into the production area. Dogs, cats, poultry, rabbits, cows, horses, etc., can all transport the pathogens.

What Must be Avoided

— Avoid buying breeding stock from unknown sources or coming from commercial finishing piggeries.

— Avoid the introduction of animals directly into the production area without first placing them in quarantine. The quarantined animals must be tested for pleuropneumonia caused by *Haemophilus* during that period.

— Avoid buying piglets in auctions and other hazardous sources.

— Avoid over-crowding and under occupation of the piggeries. There could be humidity problems in the empty or under-occupied sections.

— The farrowing units should be sub-divided in sub sections containing 10 to 20 cages. The nurseries should hold a maximum of 150 to 200 animals. The finishing areas should contain from 500 to 600 pigs per section, maximum 1,000.

Disinfection

This includes the cleaning, proper disinfection, and sanitary vacant period.

1) Cleaning

Purpose — to eliminate all organic matter.

Procedure — Clean the place of rats and disinfect. Remove all mobile material. Scrape the soil carefully, remove dust and spider webs from the walls, the cages, the ceilings, thermostats, and ventilators. Carry out the necessary repairs. Soak the walls, the soil, and the fixed materials with water containing a detergent. Scour, rinse, and allow to dry. Place back the mobile material which has been washed and disinfected. Equip the doors with a tray containing a disinfectant solution.

2) Disinfection

Choose the disinfectant. Analyze the characteristics of different products and the instructions given by manufacturers on the labels: factors influencing the activity of the disinfectant, the dilution, and the procedures to follow for its use. Consider the cost of each disinfectant before selecting one. The most expensive products are not necessarily the best adapted and the most efficient.

— Follow the dosage recommendations.

— Alternate disinfectants.

— Follow the instructions to the letter. The way to disinfect is more important than the disinfectant.

3) Fumigation (optional)

Purpose — To complete the disinfection. It permits access to places which are inaccessible to liquid disinfectants.

Note: It is effective only in hermetically sealed buildings.

4) Sanitary vacant period

Definition: Vacant period which follows a disinfection.

Purpose — To destroy the microorganisms which have not been destroyed by disinfection but made more sensitive to the action of oxygen from the air, ultra violet rays from the sun, and drying.

Allows the drying of the building. Minimum duration: 10 days. Stop access to the building to avoid recontamination.

Quarantine

Purpose — To avoid the introduction of one or more foreign infectious agents in the receiving herd. Permit the adaptation of the pigs which are introduced to the microbial situation of the receiving herd. Includes observation and microbial sampling.

1) Observation (first 15 days)

— Make sure as soon as they enter the quarantine that the breeding stock is not carrying *Haemophilus*. If they are, send them to the slaughter house.

— Examine the animals in quarantine *daily*.

— Treat against internal and external parasites.

— Vaccinate, if need be, against certain enzootic diseases in the receiving herd.

— Take care of the animals in quarantine after having fed the others.

2) Microbial Sampling

— Place a piglet in good health among the animals in quarantine to serve as an indicator of the disease.

— Introduce into the quarantine area manure coming from adult animals from the production area.

Characteristics of a Functional Quarantine Area

— Sufficiently large;

— No direct or indirect contact with the liquid manure from the production herd;

— Exterior door locked permanently;

— Corridor so as not to penetrate into the pens during feeding;

— Electricity;

— Running water;

— Satisfactory insulation;

— Heating;

— Adequate ventilation;

— Sterilization tray at the entrance;

— Permanent overalls and boots.

(Continued from Page 5)

first public exhibition of this unquered on white appliqued quilt.

The organizers would greatly appreciate hearing from anyone having articles for sale or exhibit. All queries will be considered. A small admission fee will not include the cost of attending the workshops. For information and registration forms, telephone or write to (S.A.S.E.): Sheila Wintle, R.R. 1, Richmond, Quebec, J0B 2H0 (819) 826-2063 **or** Helen Munson, YWCA, 1355 Dorchester Blvd. West., Montreal, Quebec, H3B 1T3 (514) 866-9941.

(Continued from Page 8.)

One area of heat processing which promises to ensure an even greater quality of processed fruits and vegetables is "aseptic packaging". In contrast to conventional canning where the products are placed in the can and sterilized after the can is sealed, the aseptic process involves sterilizing the product before packaging and then introducing the sterile product into a sterile airtight container (tin, plastic, aluminum). The food is presterilized by heating to temperatures as high as 150°C (300°F) for a very short period of time, normally in the range of seconds. Even though the temperatures used are much higher than in conventional canning operations, the very short time ensures that changes in flavour, colour, texture, and nutritional value are minimal. Up to the present time, the commercial application of this high temperature — short time process has been largely restricted to fluid products, such as fruit juices; however, with advances in equipment design and technology, it is certain that aseptically packaged particulate products will become increasingly available in the next few years.

his Month
ith the
QWI

Standing at the head table for Fordyce's 35th were, left to right. Mrs. Irene Williams, Mrs. Anna Louise Bromby, Mrs. Norma Sherrer, Mrs. Reda Lewis, Mrs. Mabel Ingalls, Mrs. Gladys Dustin, and Mrs. Ruby Moore. Above, Mrs. Anna Louise Bromby, corresponding secretary, and Mrs. Norma Sherrer, President. Mrs. Bromby was the first Secretary of the branch and is still very interested and active in WI work.

ppy Anniversary

rdyce WI celebrated its 35th An- ersary on December 2. Each ember could bring a friend and all joyed a turkey dinner catered for the ladies of Brome. Thirty-eight ople sat down to dinner. Seated at head table were: Mrs. Cedric ugall, the first President and her ughter, this year's President, Mrs. rma Sherrer, and other conveners 35 years ago, Mrs. Gladys Dustin, s. Elsa Syberg, Mrs. Ruby Moore, s. Anna Louise Bromby, and Mrs. da Lewis, a past President, Mrs. ther Mason, County President, s. Mabel Ingalls, Secretary, and s. Irene Williams, Treasurer.

autiful corsages of gold and blue k flowers made by Mrs. Williams re presented to the ladies at the ad table.

e hall was decorated for ristmas and there was a tree den with gifts; an ideal setting for e carols that were sung after the eal. Each member brought a gift d these were exchanged. Mrs. omby read the minutes of the first eeting and Mrs. Verna Patterson ve, in verse, a short resumé of the rk done by the group. Pennies for iendship were collected plus five nts for every 50 pounds of weight. e anniversary cake was cut and joyed with a glass of punch, hich brought a very enjoyable day a close.

Clarendon, In Brief

We thought we would briefly bring you up-to-date on some of our happenings. Clarendon WI presented QWI copies of Pioneer Women to the local library in Shawville and to the library of the Pontiac Protestant High School. (Ed.'s note: A young friend told me that she had given one to her grandmother who resides in a seniors' home. The book is always being "borrowed" by other interested residents. Have you considered placing a book or books in the seniors' homes in your area?)

Two Abbie Pritchard Throws were presented to two of our members. A substantial contribution was sent to the Pontiac Community Hospital, and each month visits are made to the Pontiac Reception Centre, a home for senior citizens. Refreshments were served at the Agricultural Society's annual meeting.

Our speaker at the January meeting was one of our members who gave us a most interesting in sight into the life and teaching of a handicapped child. It was marvellous to hear of what the schools for the deaf and handicapped are accomplishing — the technology, the skills, the patience, and the dedication of all concerned — so that, for instance, the deaf may learn to talk normally and to cope with the problems of everyday life.

Dear WI Members

Before I start my report on the different branches I want to thank the many ladies for mailing or bringing me stamps for the ACWW Convention in Vancouver in 1983. Last fall it was reported to wrap the stamps six to a little package, and some of you made it in a very artistic manner. But some of you did not realize that it should be six different Canadian stamps and that all should be shown under a transparent cover. So I had all the little parcels to open and some were really well wrapped, even with staples. So far, I have received about 5,000 stamps, and they are now all packed and ready for shipment next year. If you have some more stamps, members could bring them to the Convention at Macdonald. Please cut them from the envelope leaving about 1/4-inch on all four sides, put them in big bags, and leave the finishing touches to me. My goal, with your help, is 10,000 stamps. If you have some non-Canadian stamps, you can bring them also; they will be packed separately and the origin of the country will be clearly marked. I will do this.

This past winter was not a good helper for Institute meetings. Heavy snowfall, cold winds, and even blizzards made it sometimes impossible to bring us together but think always positively as we have a song in Germany "After any December a May is following".

At Grenville's first meeting in 1982 it was decided that the Vice-President should take over the meeting once or twice to get acquainted with the work when her term in office comes. The Secretary Treasurer told the amount of money collected during the year from a supermarket's tapes, bread tags, labels, and a small raffle. It was an encouraging amount. Mrs. Louise Murray and Mrs. Cecile Cote were thanked for their work. Parcels were also taken to "CanSave" in Montreal. A convener informed the meeting that walking for at least 20 minutes a day, rather than jogging, is much better for one's health.

Lakefield's Eileen Gilbert and Pat Garraway filled 12 Christmas baskets for shut-ins. Donations were given to the Douglas Hospital and to the L.R.H.S. Spectrum. CanSave sold a flower garden afghan made by the branch members.

Arundel's Motto was: "Travel broadens the mind" and the roll call "was to name an interesting place they had visited and tell something about it". Elizabeth Hutchison presented some impressive slides of Denmark, Norway, and Sweden taken by her on visits to those countries and illustrated verbally by personal anecdotes. Terri Thorncroft's report was entitled "Know what you are eating" and pointed out the possible hazards of eating home grown vegetables produced by a novice gardener, citing the case of a man who dined with friends and ate turnip from the garden. In fact, it was water hemlock, a root which resembles turnip or parsnip and is poisonous and can be fatal! The Home Economics Convener's article dealt with designing clothes for the disabled. Even though a person is disabled, he or she still wants clothes to be as becoming as possible, and, at the same time, consideration should be given to physical problems. Practical factors incorporated with good looks are important. Health and Welfare Convener Margaret Batty had a timely report about fires at this time of the year. Her article dealt with "How to survive a hotel fire or one in an office building". Many people die in fires unnecessary. Take time to locate the nearest stair exit; remember to crawl on the floor to avoid smoke, and use wet towels around the mouth and nose to avoid smoke inhalation. Citizenship Convener Pauline Graham spoke on the topic of Metric Conversion. At the February meeting it was decided to offer the services of a "sitter" to stay with a shut-in whose wife is unable to leave him alone for any length of time. This would enable her to have some worry-free time for shopping or whatever she wishes. Again the conveners brought in good and interesting reports. The Agriculture Convener spoke of a "pulse" as being something one thinks of as throbbing in the wrist. However, pulses are edible legumes of increasing importance in the world's food supply, as they are good and inexpensive source of protein in the countries where the cost of meat is prohibitive. They are being used increasingly in our own diet. Beulah Williams spoke of clothes for cold weather. Wool gives more warmth than man-made fabrics. Layers of light clothing are warmer than one heavy garment, as the layers of fabric trap layers of air and so add to the warmth. She also mentioned that wearing a hat is very important and helps to keep the rest of the body warm. Health and Welfare Convener Margaret Batty spoke about diabetes, sometimes misunderstood. It can strike juveniles but more often the onset is in maturity. Sometimes inherited, it is most prevalent in obese people and is a common cause of blindness.

On February 2, 13 members of **Pioneer** and one visitor met and enjoyed the luncheon which preceded the meeting. The President read the motto: "Life is the flower of which love is the honey". The members thanked Mrs. A. Oswald for her efficient service as President, and Mrs. G. Smith made a motion to give Mrs. Oswald a life membership. This motion was seconded by Mrs. K. McCaig and carried.

Upper Lachute East End's members made a donation to the Orange Benevolent Fund in memory of a member. Mrs. W. Skinner gave a very interesting talk on the Adult Literacy Program that is being run by the Adult Education Department. Mrs. Skinner is a volunteer and told how rewarding a job it is particularly as the course is designed for quick learning.

At their afternoon meeting the **Brownsburg** W.I. entertained invited guests. Mrs. Amy Mason presided and warmly welcomed everybody. It was announced that the Brownsburg Brownies Pack had offered to help any senior citizen who needed spring work done, such as raking leaves, etc. Mrs. Rhonda Burnham spoke about Brownsburg's Civil Protection Project, inviting the W.I. to participate. One member, Mrs. Goldup, is already involved in a similar undertaking for Chatham. A resolution was passed and signed to support the County Council and the Provincial member in their efforts, according to law, to keep the Registry Office in the County of Argenteuil. A letter of thanks was received for the Christmas gift of fruits etc. to the Orange and Protestant Home in Rosemere. A similar gift will go to the home at Easter time. Also a note of thanks came from the 4-H Club for a donation. The education convener spoke of the disturbing and still unsettled questions concerning the future of education in Quebec and the publicity convener read from Charles Lynch's column in the *Gazette* claiming that the blame for high interest rates lies outside Canada and would prevail no matter which party was in power.

Florrie Yeoman and Dorothy MacDonald of **Lakefield** Branch showed the lovely sweaters they knitted for CanSave. A good sum was given to Holy Trinity Church to help towards heating the hall. A large number of Women's Institute members and friends gathered at the Presbyterian Church hall, Lachute, for their February meeting as **Frontier** entertained the **Brownsburg** and **Dalesville-Louisa** branches. Plans were made for the annual visit to the St. Philippe Manoir. Members were reminded to work on handicrafts for both their Mother's Day Tea and the Bazaar on May 1 at Cushing, also for the Lachute Fair exhibits. Special guest speaker was Miss Hollande Leroux, a handicapped person who had already won the admiration of the community. Miss Leroux told how operations, sponsored by the Shriners, had been

such a help to her. Sybil Plummer gave an original humorous monologue and two musical games were played. Mrs. Crawford read several items from a Montreal newspaper published in 1883. One reads as follow: "The Dominion versus the Provinces. . .", "The Toronto Globe advocates the re-casting of Confederation so as to prevent encroachment by the Dominion of the Provinces". Another told that the mail was guaranteed to be delivered several times a day in Montreal at this time.

The motto of the Sunshine and Cheer meeting of **Jerusalem-Bethany** was "to make the world a friendly place, one must show a friendly face". The convener, Miss Gertrude MacMahon, said that in so many ways a smile is so welcomed by a lonely individual, a shut-in, or a person in a new environment. A donation was sent to the local Historical Society for use at the Carillon Museum. Introduced to the members was Miss Gladys Davis who gave a most interesting talk on a favourite topic of hers — ceramics. She explained about many of the various steps and finishes for ceramic articles. To add to her talk she had a lovely display of her work.

Dalesville-Louisa Women's Institute had as guest speaker Jamie McOuat who spoke about the 4-H Club. It is for boys and girls from ages 10 - 20 years. They work hard to train their calves to lead and stand to the best advantages and make garden plots to grow vegetables and flowers to show at their Achievement Day and at exhibitions. It helps the young people to be better citizens; not all members go into farming after finishing school, but a lot do. They have a barn meeting once a month, and they have a Dairy Booth at the Lachute Fair. They appreciate donations as it is expensive to transport the calves to exhibitions around the country. They also enter in Square Dance competitions and have been on two exchange trips, one to B.C., another to Alberta.

Marcil celebrated their 34th anniversary with a gathering of 20 members and guests, one of whom was a Charter Member, Edith Watt. A summary of the branch history was read by Anne Nadeau, and a reporter from the local paper "*SPEC*" was on hand to take pictures.

Stanstead North WI President Mrs. Mildred Wheelock, left, presents a 25-year pin to Mrs. Ruth Ashman. Mrs. Ashman has served as a branch convener, is a Past President, and is branch Secretary. She has also been a County Vice President.

New Richmond West welcomed a new member and commemorated the International Year of the Handicapped by holding a Social Evening where they raised $350. This sum was given to a local handicapped student who is attending John Abbott College. They had a guest speaker who showed slides on the organization of the Gaspé Literacy Council. A copy of the QWI Pioneer Women book was placed in the local library and another copy presented to a senior citizen. A donation was made to the Pediatric Ward of the local hospital.

Matapedia's 14 members met in their beautifully decorated hall and reported to the Roll Call with a Valentine and the recitation of a verse. One member was celebrating her birthday, but as she was too ill to attend the meeting, the decorated birthday cake, after sampling, was sent to her. Plans were made for a Parcel Post sale in April.

Port Daniel's Roll Call was an exchange of cups and saucers and each member was delighted with her gift and a letter from the Provincial President, Mrs. Ina Kilgour, was read.

Huntingdon had a display in the window of the Little Green Library for the W.I.'s 85th birthday in February 1982. At Christmas, they gave 12 baskets of goodies, contributed by different members, to shut-ins and lonely people. At their February meeting they discussed the duties of a citizen. Citizenship Convener Gladys Reid prepared an article on this subject. Here are some important thoughts: "I asked myself: are the daily, almost hourly barbs directed toward our politicians on radio, T.V., and in the newspaper, the constant criticism of every move our governments make, the ugly cartoons which aim to weaken our leaders helping to build a stronger Canada?". . . "Politics is the lifeblood for a free society. Yet many people regard this vital activity with a mixture of apathy and scorn. It is time to stop sniping at politicians and to take up the responsibilities of citizenship. Democracy makes politicians of us all. . ." . . . "I was pleased this past week with the CBC program "English Quebec". During these hours French and English talked directly to each other or gave their opinions over the radio to Dennis Trudeau, the moderator. . . Speak to your French neighbours and friends. Try to explain our feelings and fears and, more important, listen to their grievances and opinions. Remember there are always two sides to every debate. And as WI members our aim is to teach and to promote Canadian citizenship. We, in Quebec, have a real challenge."

Hemmingford catered for a Senior Citizen luncheon. They hold handicraft courses in an old convent where the teachers are bilingual. They had a demonstration of a Christmas table centre, using a shallow basket, bits of evergreen,

artificial flowers, and Christmas ornaments. A donation of $266.50 for UNICEF was reported.

Dewittville members heard an interesting and entertaining talk about gnomes. The speaker's, Ellen Bulow, parents immigrated from Denmark, and making little homes for gnomes is a Danish tradition that she still follows in her own home. At their Christmas party they sung carols accompanied by piano, violin, and guitar.

Dundee held a card party to raise funds and embellished their Christmas party with a musical evening.

Howick heard a beautiful might-have-been story "The Three Wise Women". A recipe for "Carob Brownies" — using carob instead of chocolate or cocoa was given. No caffeine, no baking powder, no sugar, no calories!

Guest speaker of **Franklin Centre** was Dr. I. Vandor of Barrie Memorial Hospital. He spoke on cardiology. He explained that our heart beat will increase with a scare or excitement; but it might also slow down at such times. A person can really be "scared to death".

Members of **York** WI answered the roll call by donating a birthday or get well card plus a stamp. Our little socks were brought in netting us some extra funds. One member, Mrs. Emily Annett, is eligible for her 25-year pin which will be presented next month. Plans for the masquerade to be held during the York-Wakeham Carnival were discussed and made.

Dunham's Agriculture Convener, Mrs. Norma Sherrer, gave ideas on the care of poinsettas and growing cacti in glass containers. Citizenship Convener, Mrs. Betty Wilkinson, read a story on Sir Sanford Fleming, an engineer surveyor. He came in 1845 from Scotland to Canada. He was a railroad builder, designed a Canadian stamp, and invented Standard Time. She also told about an article "Quebec, I love you" by a Japanese artist who met his Quebec wife in Paris and now lives near Sherbrooke. Home Economics Convener, Mrs. Lucy Staton, gave informations on heat pumps, explaining how they can cut down on energy costs. At the January meeting, the County President, Mrs. Mason, spoke on women's rights in the new Constitution, new laws regarding the naming of children, and the effect of alcohol on unborn children. She also asked that members support libraries and gave information about QWI activities. Donations in money were given to the Flag Tour Project, to Butters Foundation, and the Gazette Christmas Fund. Packages and a birthday cake were sent to their sponsored children at Dixville Home.

Fordyce donated money to the Heros Memorial School, the Tiny Tim Fund, to the Flag Tour Fund, and to the Douglas Hospital. Plaques were presented to the winners of the Canadian Unity Competition. Mrs. Elsa Syberg held a contest asking the names of countries being members of the A.C.W.W. Mrs. Norma Sherrer was the winner, naming 38.

One of **Stanbridge East's** mottoes was "A sharp tongue is the only edged tool that grows keener with constant use". A publicity project of Publicity Convener, Mrs. C. Rhicard, is to write biographies of as many of our pioneer members as possible. One was written for Mrs. P. Rhicard who filled many offices including president and secretary of the branch, as well as county president. She was instrumental in founding the St. Armand branch which is now disbanded. This biography was read at one meeting. Snapshots are being collected for a pictorial history of the Stanbridge East branch. At Christmas the Welfare and Health Convener Mrs. Erma TenEyck visited Villa Lac Champlain and presented pyjamas, scarves, mittens, and educational toys. The conveners have all provided interesting topics such as C.A.S. tests on garbage bags, squid meal for broilers, housing farm machinery, living conditions in Nigeria from a school teacher working there. To commemorate the 85th birthday of the Women's Institute it was voted to send $50 to the Hoodless Foundation.

To celebrate the 85th birthday of the Women's Institute **Cowansville** held a special meeting. Mrs. Murray Mason, the County President, attended the meeting and urged them to use the Cowansville Public Library more often.

(More branch news next month.)

OVERSEAS OPPORTUNITIES in GHANA

CUSO placements in the Third World offer you responsibility and the chance to use your initiative. In return, you'll experience a different culture and the personal rewards of sharing your skills and experience with others. Opportunities currently available include:

Agricultural Extension Workers

- Two positions are available in northern Ghana in an agricultural project aimed at raising the income and living standards of small-scale subsistence farmers. A major part of the project is the training of farmers in the use and care of bullocks for plowing purposes.
- One position is available in the Bunkpuruga Community Development Project. Duties include setting up and maintaining an agricultural store; operating a demonstration farm; establishing a tree-planting program; and assisting and instructing the local farmers in the use of fertilizers and improved farming techniques.

Applicants should have relevant degrees or diplomas and a broad practical knowledge of agriculture. Positions are also available in other countries and other fields. Assignments are for two years. Salary is adequate for overseas' living costs with good fringe benefits.

For more information, contract:

CUSO

CUSO Agriculture-A6 Program
4824 Côte-des-Neiges
Montréal, Québec
H3V 1G4

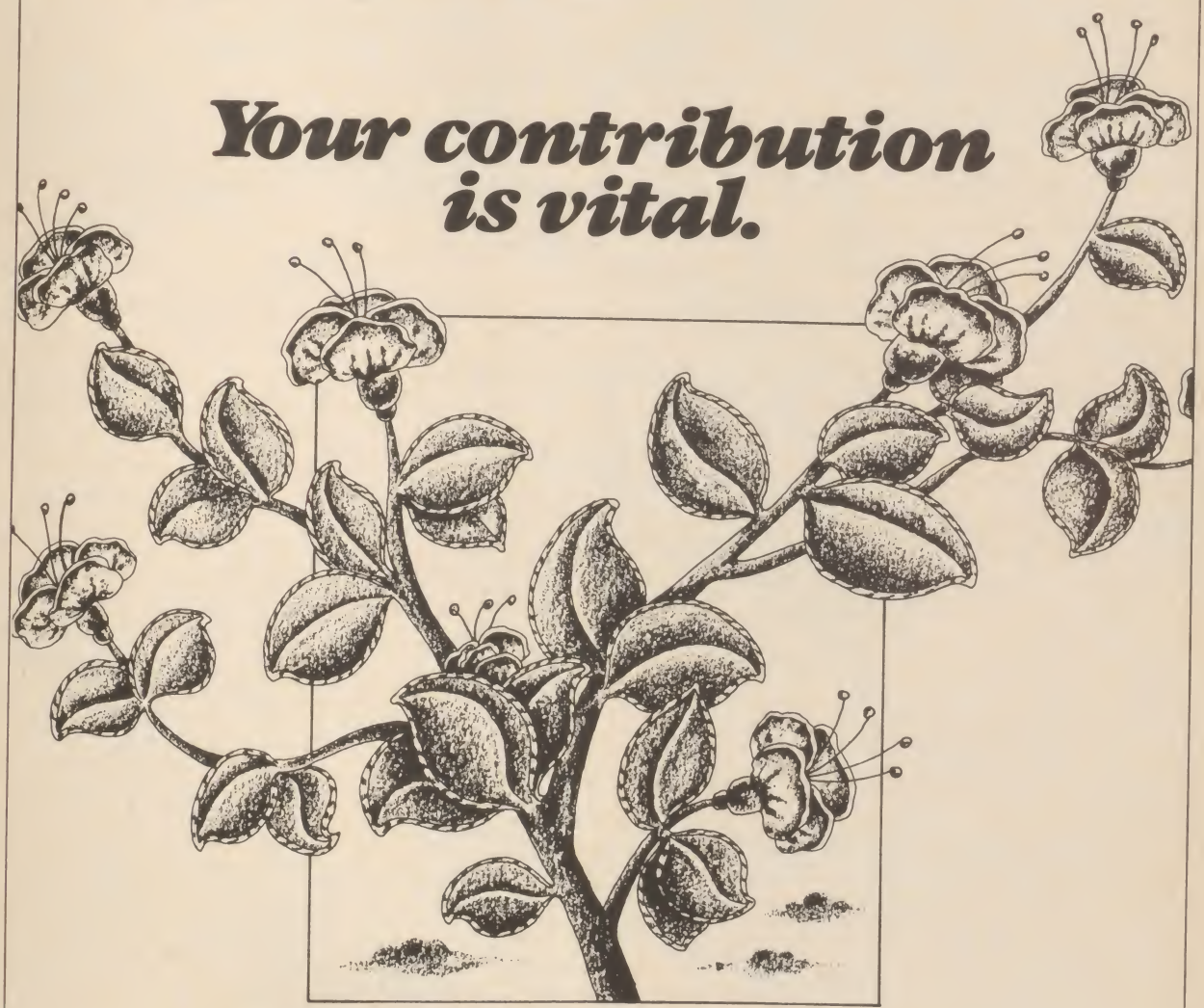
We're committed to your future.

The cultural contribution that is made by Quebec's anglophone communities enriches the lives of all Canadians. Contributions to the arts, to communications, to the economy, in fact, to every aspect of Canadian Life.

The anglophone communities of the Province of Quebec are an active, vital part of our Canadian way of living, an important part of our heritage that deserves to flourish.

At the Secretary of State we want to help the anglophone communities of the Province of Quebec to continue to make their cultural contribution to Canada, because that contribution is vital to the heritage of all Canadians.

Your contribution is vital.



For more information, contact: The Secretary of State,
1080, Beaver Hall Hill, Montreal, Quebec, H2Z 1S8. Tel.: (514) 283-5699 or call no charge 1-800-361-7418

Secretary of State / Secrétariat d'État

Canada

CO·OP®
A fertilization program thought in function of your needs and crops.
THE TAILOR MADE FERTILIZATION... BECAUSE YOU ARE UNIQUE
Your CO·OP Representative, at your service.
COOPÉRATIVE FÉDÉRÉE DE QUÉBEC
FEEDS & FERTILIZER DIVISION